

FIG. 1

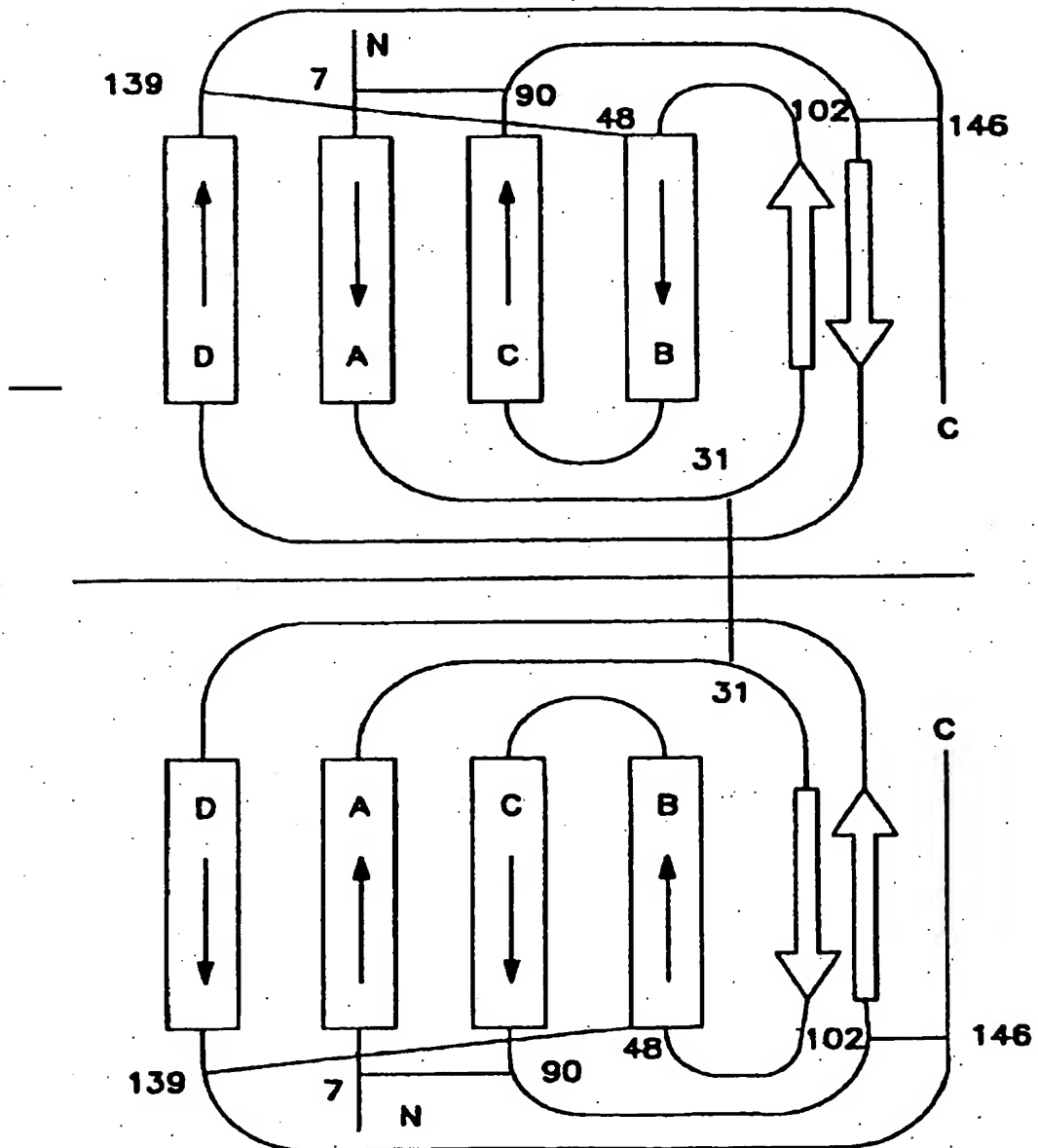


FIG. 2

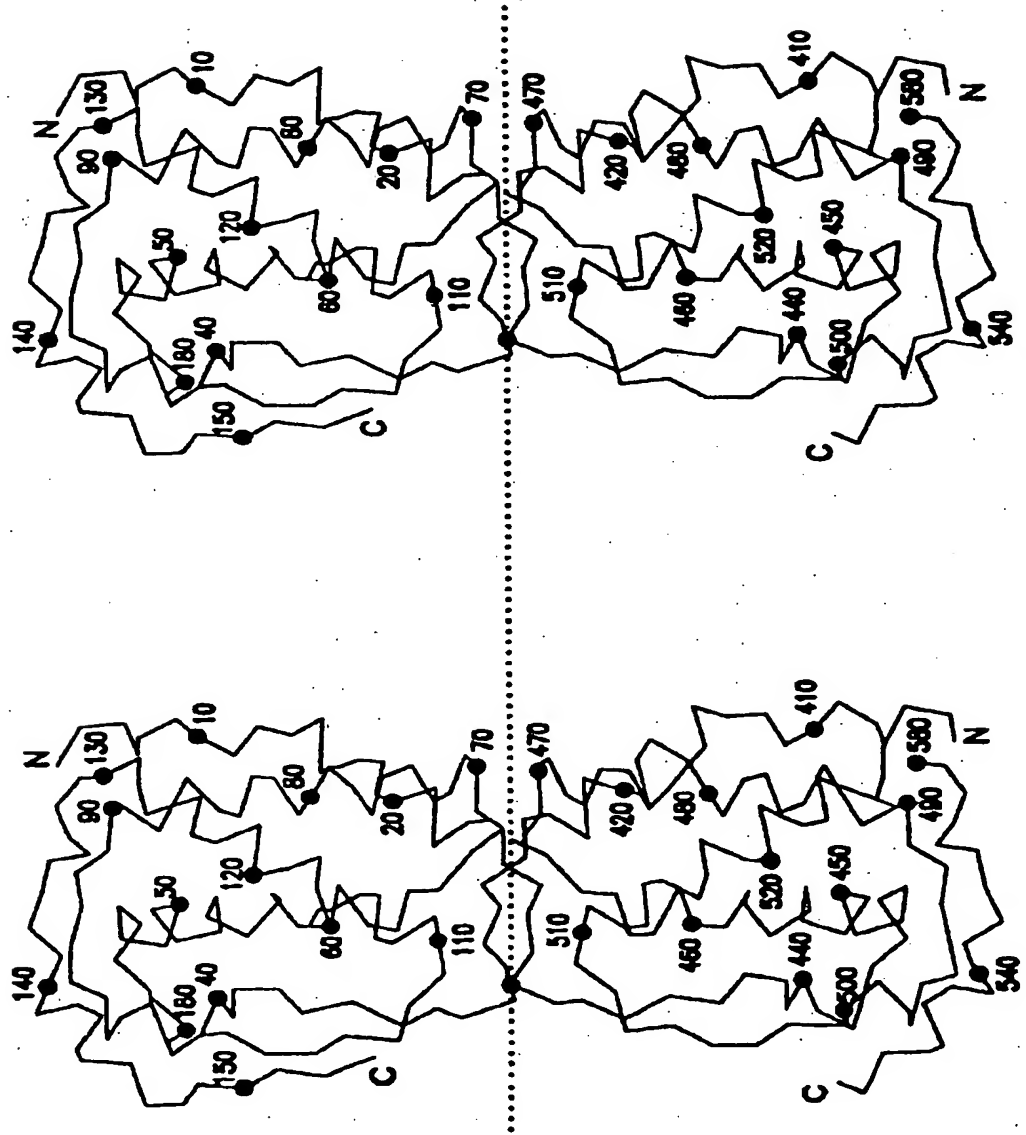


FIG. 3

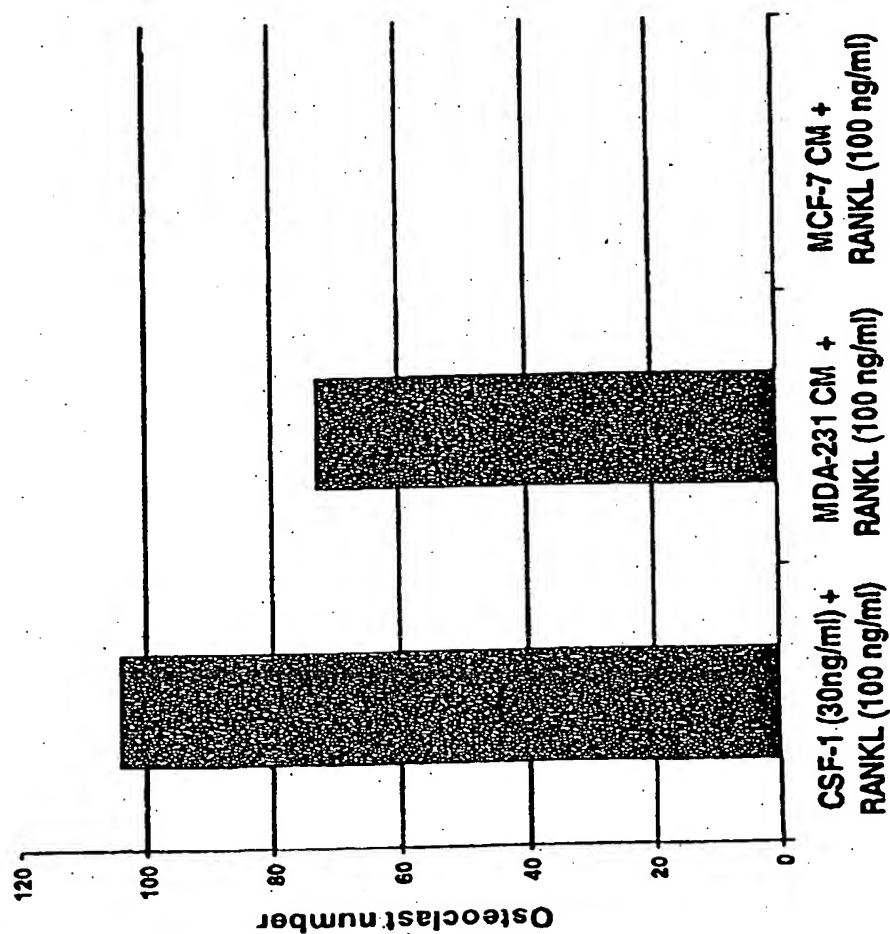


Fig. 4

Amino acid sequence of M-CSF-specific antibody RX1

RX1 Light chain:

	1	2	3
DILLTQSPAILSVSPGERV	FSFSCRASQSIGT	SIHWYQORTNGSP	RLLIKYASESISGIPSRFSGSGGTDFTLSINSVESEDIADYYCQQINSWPTTFGGG
LEIKRADAAPT	VSIFPPSSEQLTSGGASV	VCFLNFPYKDINVKWKIDG	SERQNGVLNSWTDQDSKDSYMSSTLTLT
KSFNRNEC			DEYERHNSYTCEATHKTSTSPIV

RX1 Heavy Chain:

	4	5
DVQLQESGPGLVKPSQSL	SLTCTVTDYSDYANWIRQFPGNKLEWMGYISYSGSTSYNPSL	KSRISITRDTSKNQFFLQNSVT
AMDYWGQGT	SVTVSSAKTTAPSVYPLAPVCGD	TTGSSVTLGCLVKGYFPEPVTLTWNSGSLSSGVHTFPAVLQSDLYTLSSSVTVTSSTWPSQ
SSTKVDK	KIEPRGPTIKPCPPCKCPAPNLLGGPSVFI	FPFKIKDVLMI
QHQDWM	SGKEFKCKVNNKOLPAPIERTISKPKGSVRAPQVYVLP	PPPEEEMTKKQVTLTCMVTDFMPEDIYVEWTNNGKTELNYKNTEPVLDS
VEKQNWVERNSY	SCSVVHEGLNHHTTKSFSRTPG	

Fig. 4

Amino acid sequence of M-CSF-specific antibody RX1

RX1 Light chain:

1 2 3  
DILLTQSPAILSVSPGERVFSQASQSIGTSHWYQORTNGSPRLLIKYASESISGIPSRFSGSGGTDFTLSINSVESEDIADYYCQQINSWPTTFGGGTK  
LEIKRADAAPTIVSIFPPSSEQLTSGGASVVCFLNNFYPKDINVKWKIDGSEKQNGVLSWTDQDSKDYMSSTLTLTCKEYERHNSYTCEATHKTSTSPIV  
KSFNRNEC

RX1 Heavy Chain:

4 5  
DVQLQESGPGLVKPSQSLTCTVTDYSDYAWNWIRQFPGNKLEWWMGYISYSGSTSYNPSLKSRIITRDTSKNQFFLQLNSVTTEDTATYYCASFDYAH  
AMDYWGQGTSTVSSAKTTAPSVYPLAPVCGDTTGSSVTLGCLVKGYFPEPVTLTWNSGSLSSGVHTFPAVLQSDLYTLSSSVTVTSSTWPSQITCNVAHPA  
SSYKVDKKIEPRGPTIKPCPPCKCAPNLLGGPSVFIAPPKIKDVLMISSLPIVTCVVVDVSEDDPDVQISWVFNNEVHTAQQTQTHREDYNSTLRVVSALPI  
QHQQWMSGKEFKCKVNNKDLPAPIERTISKPKGSVRAPQVVVLPPEEEMTKKQVTLTCMVTDMPEDIYVEWTNNGKTELNYKNTEPVLDSGSGYFMYSKLR  
VEKKNWVERNSYSCSVVHEGLHNHhttkSFSRTPG

Fig. 5

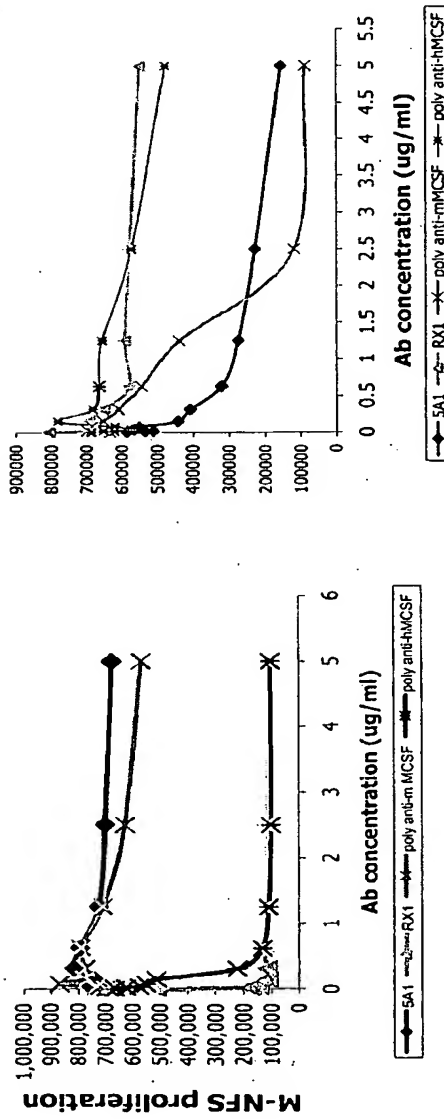


Fig. 6

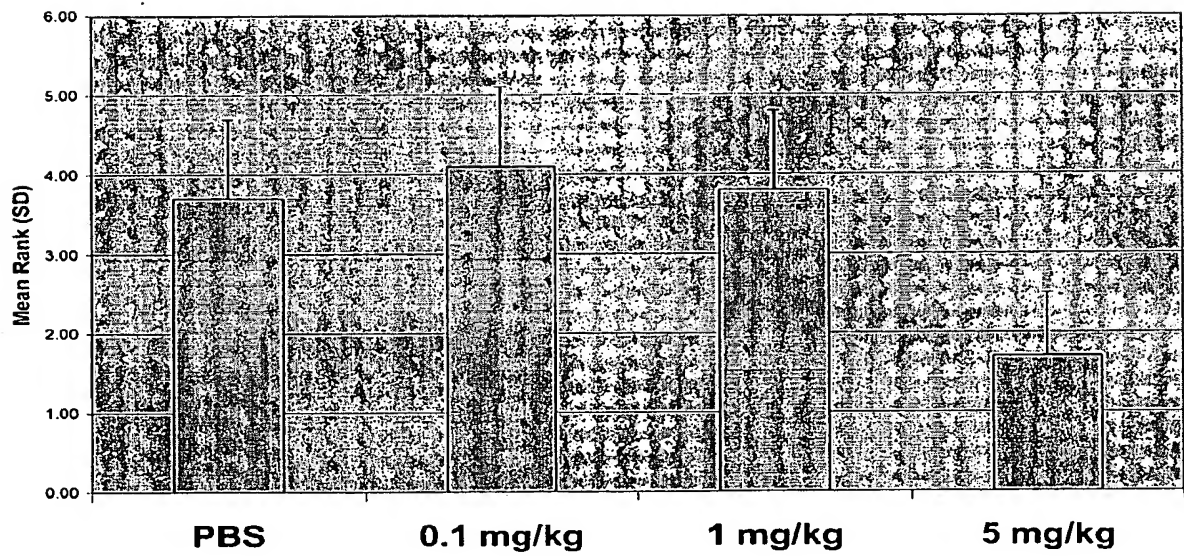
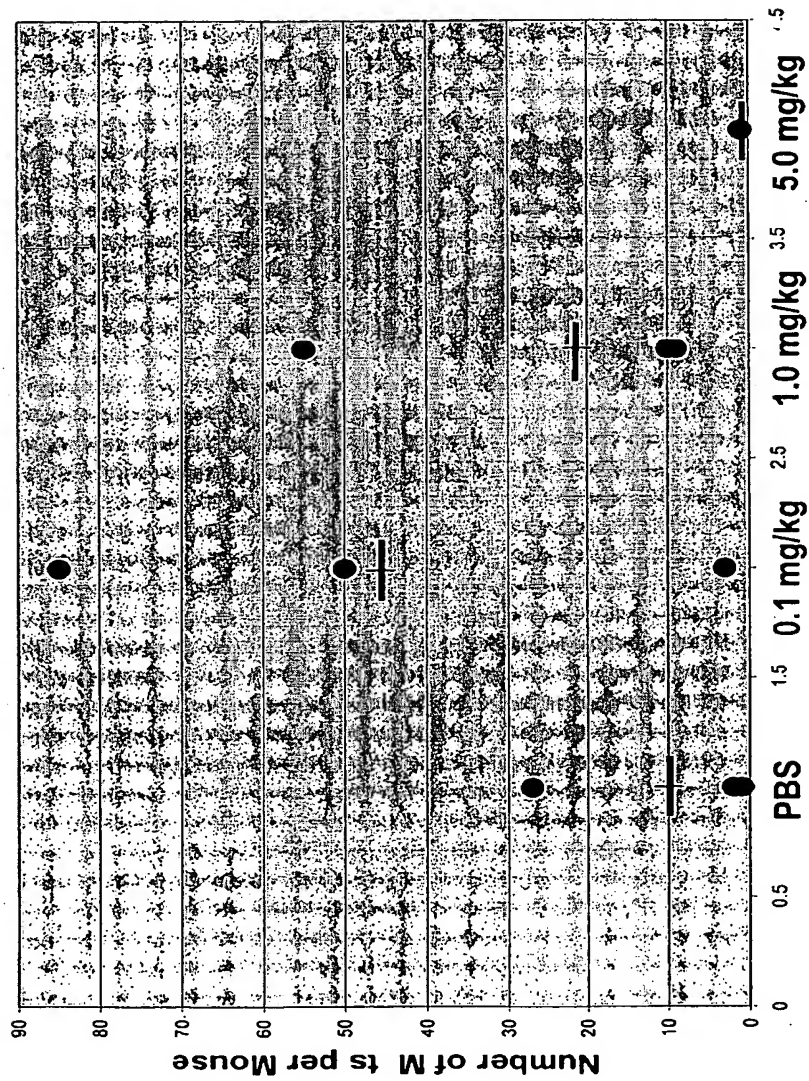


Fig. 7





## FIG. 8A

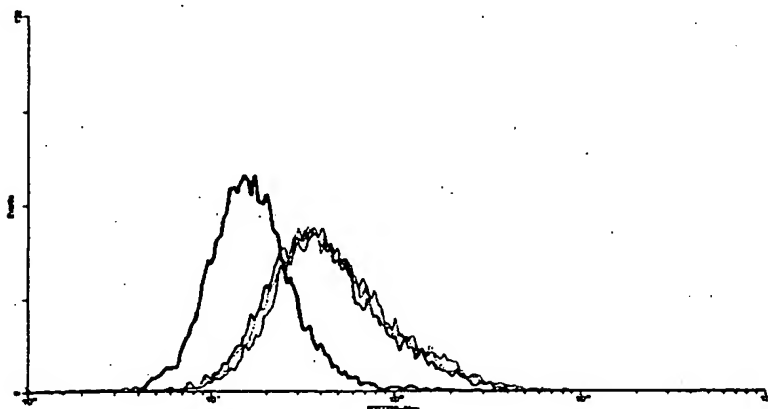
### Binding of MCSF-specific antibody to breast cancer cell line MDA231

Red: no antibody control

Black: M-CSF antibody 1 ug/ml

Green: M-CSF antibody 10 ug/ml

Blue: M-CSF antibody 50 ug/ml



## FIG. 8B

### Binding of MCSF-specific antibody to multiple myeloma cancer cell line ARH77

Red: no antibody control

Green: M-CSF antibody 5 ug/ml

Blue: control IgG2a 5 ug/ml

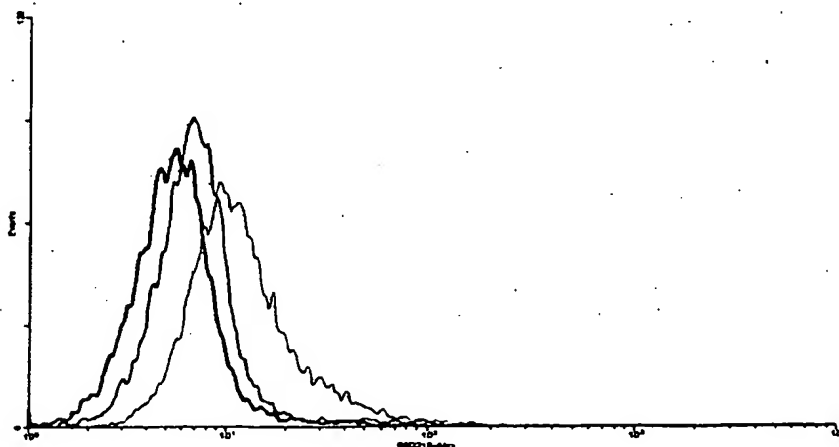


FIG. 9

Cancer Type	Cancer Status	Score 0	Score 1	Score 2	Score 3	Score 4	% with scores 3 or high	r
adrenal	normal	10	5	5	0	0		0
basal cell	cancer	5	0	0	0	0		0
bladder	normal	6	1	2	1	0		10
brain	normal	17	1	2	0	0		0
breast	cancer	6	5	13	62	0		72
breast	normal	7	5	7	6	0		24
carcinoids	cancer	9	2	2	0	0		0
carcinoids (muscle)	cancer	1	0	1	0	0		0
choriocarcinoma	cancer	1	0	0	0	0		0
colon	normal	4	0	2	0	0		0
colon	cancer	9	0	1	4	0		27
fibrosarcoma	cancer	3	1	0	0	0		0
gallbladder	normal	2	1	0	1	0		25
germ cell	cancer	1	0	0	0	0		0
heart	normal	7	3	2	4	0		25
kidney	normal	5	10	1	4	0		20
kidney	cancer	8	1	0	3	0		25
leiomyosarcoma	cancer	5	0	0	0	0		0
liver	normal	11	3	4	1	0		5
liver	cancer	5	3	0	3	0		27
lung	normal	19	0	1	0	0		0
lung	cancer	3	1	0	3	0		43
lymphoma	cancer	13	0	3	2	0		12
melanoma	cancer	7	0	2	5	0		36
melanoma (inflammation)	cancer	0	0	0	1	0		100
mesothelioma	cancer	6	0	0	0	0		0
n uroblastoma	cancer	1	0	0	0	0		0
ovary	normal	6	0	2	0	0		0
ovary	cancer	8	2	0	4	0		29
pancreas	normal	9	2	5	4	0		20
pancreas	cancer	8	1	0	3	0		25
prostate	normal	0	3	8	3	0		21
prostate	cancer	9	1	1	4	0		27
sarcoma all	cancer	6	0	2	2	0		20
sarcoma	cancer	3	0	2	1	0		17
sarcoma (kidney)	cancer	3	0	2	1	0		17
sarcoma mfh	cancer	2	0	0	0	0		0
seminoma	cancer	3	0	0	0	0		0
small intestine	normal	2	1	0	1	0		25
spleen	normal	14	2	3	0	0		0
squamous cell	cancer	3	0	0	0	0		0
stomach	normal	3	2	2	1	0		13
stomach	cancer	7	1	1	1	0		10
teratoma	cancer	1	0	0	0	0		0
testis	normal	5	1	3	3	0		25
thyroid	normal	15	0	0	0	0		0
thyroid	cancer	6	2	1	2	0		18
undiff all	cancer	6	0	2	1	0		11
undif	cancer	5	0	2	0	0		0

Atty. Docket No. 27527/39771

Inventors: Zimmerman et al.

Title: M-CSF-Specific Monoclonal Antibody RX1 and  
Uses Thereof

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Fig. 10

Met	Thr	Ala	Pro	Gly	Ala	Ala	Gly	Arg	Cys	Pro	Pro	Thr	Thr	Trp	Leu	
1				5					10					15		
Gly	Ser	Leu	Leu	Leu	Leu	Val	Cys	Leu	Leu	Ala	Ser	Arg	Ser	Ile	Thr	
			20					25					30			
Glu	Glu	Val	Ser	Glu	Tyr	Cys	Ser	His	Met	Ile	Gly	Ser	Gly	His	Leu	
		35					40					45				
Gln	Ser	Leu	Gln	Arg	Leu	Ile	Asp	Ser	Gln	Met	Glu	Thr	Ser	Cys	Gln	
	50					55					60					
Ile	Thr	Phe	Glu	Phe	Val	Asp	Gln	Glu	Gln	Leu	Lys	Asp	Pro	Val	Cys	
65					70					75					80	
Tyr	Leu	Lys	Lys	Ala	Phe	Leu	Leu	Val	Gln	Asp	Ile	Met	Glu	Asp	Thr	
				85					90					95		
Met	Arg	Phe	Arg	Asp	Asn	Thr	Pro	Asn	Ala	Ile	Ala	Ile	Val	Gln	Leu	
			100					105					110			
Gln	Glu	Leu	Ser	Leu	Arg	Leu	Lys	Ser	Cys	Phe	Thr	Lys	Asp	Tyr	Glu	
		115					120					125				
Glu	His	Asp	Lys	Ala	Cys	Val	Arg	Thr	Phe	Tyr	Glu	Thr	Pro	Leu	Gln	
	130					135					140					
Leu	Leu	Glu	Lys	Val	Lys	Asn	Val	Phe	Asn	Glu	Thr	Lys	Asn	Leu	Leu	
145					150					155					160	
Asp	Lys	Asp	Trp	Asn	Ile	Phe	Ser	Lys	Asn	Cys	Asn	Asn	Ser	Phe	Ala	
				165				170						175		
Glu	Cys	Ser	Ser	Gln	Gly	His	Glu	Arg	Gln	Ser	Glu	Gly	Ser	Ser	Ser	
			180					185					190			
Pro	Gln	Leu	Gln	Glu	Ser	Val	Phe	His	Leu	Leu	Val	Pro	Ser	Val	Ile	
		195					200					205				
Leu	Val	Leu	Leu	Ala	Val	Gly	Gly	Leu	Leu	Phe	Tyr	Arg	Trp	Arg	Arg	
	210					215					220					
Arg	Ser	His	Gln	Glu	Pro	Gln	Arg	Ala	Asp	Ser	Pro	Leu	Glu	Gln	Pro	
225					230					235					240	
Glu	Gly	Ser	Pro	Leu	Thr	Gln	Asp	Asp	Arg	Gln	Val	Glu	Leu	Pro	Val	
				245					250					255		

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Fig. 11

Met	Thr	Ala	Pro	Gly	Ala	Ala	Gly	Arg	Cys	Pro	Pro	Thr	Thr	Trp	Leu
1				5					10					15	
Gly	Ser	Leu	Leu	Leu	Val	Cys	Leu	Leu	Ala	Ser	Arg	Ser	Ile	Thr	
			20					25					30		
Glu	Glu	Val	Ser	Glu	Tyr	Cys	Ser	His	Met	Ile	Gly	Ser	Gly	His	Leu
			35					40					45		
Gln	Ser	Leu	Gln	Arg	Leu	Ile	Asp	Ser	Gln	Met	Glu	Thr	Ser	Cys	Gln
			50				55					60			
Ile	Thr	Phe	Glu	Phe	Val	Asp	Gln	Glu	Gln	Leu	Lys	Asp	Pro	Val	Cys
65					70					75				80	
Tyr	Leu	Lys	Lys	Ala	Phe	Leu	Leu	Val	Gln	Asp	Ile	Met	Glu	Asp	Thr
				85					90					95	
Met	Arg	Phe	Arg	Asp	Asn	Thr	Pro	Asn	Ala	Ile	Ala	Ile	Val	Gln	Leu
			100					105					110		
Gln	Glu	Leu	Ser	Leu	Arg	Leu	Lys	Ser	Cys	Phe	Thr	Lys	Asp	Tyr	Glu
			115				120					125			
Glu	His	Asp	Lys	Ala	Cys	Val	Arg	Thr	Phe	Tyr	Glu	Thr	Pro	Leu	Gln
			130				135				140				
Leu	Leu	Glu	Lys	Val	Lys	Asn	Val	Phe	Asn	Glu	Thr	Lys	Asn	Leu	Leu
145					150					155				160	
Asp	Lys	Asp	Trp	Asn	Ile	Phe	Ser	Lys	Asn	Cys	Asn	Asn	Ser	Phe	Ala
				165					170					175	
Glu	Cys	Ser	Ser	Gln	Asp	Val	Val	Thr	Lys	Pro	Asp	Cys	Asn	Cys	Leu
			180					185					190		
Tyr	Pro	Lys	Ala	Ile	Pro	Ser	Ser	Asp	Pro	Ala	Ser	Val	Ser	Pro	His
			195				200					205			
Gln	Pro	Leu	Ala	Pro	Ser	Met	Ala	Pro	Val	Ala	Gly	Leu	Thr	Trp	Glu
			210			215					220				
Asp	Ser	Glu	Gly	Thr	Glu	Gly	Ser	Ser	Leu	Leu	Pro	Gly	Glu	Gln	Pro
225					230					235				240	
Leu	His	Thr	Val	Asp	Pro	Gly	Ser	Ala	Lys	Gln	Arg	Pro	Pro	Arg	Ser
				245					250					255	
Thr	Cys	Gln	Ser	Phe	Glu	Pro	Pro	Glu	Thr	Pro	Val	Val	Lys	Asp	Ser
			260					265					270		
Thr	Ile	Gly	Gly	Ser	Pro	Gln	Pro	Arg	Pro	Ser	Val	Gly	Ala	Phe	Asn
			275				280					285			
Pro	Gly	Met	Glu	Asp	Ile	Leu	Asp	Ser	Ala	Met	Gly	Thr	Asn	Trp	Val
290					295						300				
Pro	Glu	Glu	Ala	Ser	Gly	Glu	Ala	Ser	Glu	Ile	Pro	Val	Pro	Gln	Gly
305					310					315				320	
Thr	Glu	Leu	Ser	Pro	Ser	Arg	Pro	Gly	Gly	Gly	Ser	Met	Gln	Thr	Glu
				325					330					335	
Pro	Ala	Arg	Pro	Ser	Asn	Phe	Leu	Ser	Ala	Ser	Ser	Pro	Leu	Pro	Ala
			340				345						350		
Ser	Ala	Lys	Gly	Gln	Gln	Pro	Ala	Asp	Val	Thr	Gly	Thr	Ala	Leu	Pro
			355				360					365			
Arg	Val	Gly	Pro	Val	Arg	Pro	Thr	Gly	Gln	Asp	Trp	Asn	His	Thr	Pro
			370			375					380				
Gln	Lys	Thr	Asp	His	Pro	Ser	Ala	Leu	Leu	Arg	Asp	Pro	Pro	Glu	Pro
385					390					395				400	
Gly	Ser	Pro	Arg	Ile	Ser	Ser	Leu	Arg	Pro	Gln	Gly	Leu	Ser	Asn	Pro
			405						410					415	
Ser	Thr	Leu	Ser	Ala	Gln	Pro	Gln	Leu	Ser	Arg	Ser	His	Ser	Ser	Gly
			420					425					430		
Ser	Val	Leu	Pro	Leu	Gly	Glu	Leu	Glu	Gly	Arg	Arg	Ser	Thr	Arg	Asp
			435				440					445			
Arg	Arg	Ser	Pro	Ala	Glu	Pro	Glu	Gly	Gly	Pro	Ala	Ser	Glu	Gly	Ala
			450				455				460				
Ala	Arg	Pro	Leu	Pro	Arg	Phe	Asn	Ser	Val	Pro	Leu	Thr	Asp	Thr	Gly
465					470					475				480	
His	Glu	Arg	Gln	Ser	Glu	Gly	Ser	Ser	Ser	Pro	Gln	Leu	Gln	Glu	Ser
			485					490						495	
Val	Phe	His	Leu	Leu	Val	Pro	Ser	Val	Ile	Leu	Val	Leu	Leu	Ala	Val
			500					505					510		
Gly	Gly	Leu	Leu	Phe	Tyr	Arg	Trp	Arg	Arg	Arg	Ser	His	Gln	Glu	Pro
			515				520					525			
Gln	Arg	Ala	Asp	Ser	Pro	Leu	Glu	Gln	Pro	Glu	Gly	Ser	Pro	Leu	Thr
			530				535				540				
Gln	Asp	Asp	Arg	Gln	Val	Glu	Leu	Pro	Val						

Fig. 12

Met	Thr	Ala	Pro	Gly	Ala	Ala	Gly	Arg	Cys	Pro	Pro	Thr	Thr	Trp	Leu	1	5	10	15
Gly	Ser	Leu	Leu	Leu	Leu	Val	Cys	Leu	Leu	Ala	Ser	Arg	Ser	Ile	Thr	20	25	30	
Glu	Glu	Val	Ser	Glu	Tyr	Cys	Ser	His	Met	Ile	Gly	Ser	Gly	His	Leu	35	40	45	
Gln	Ser	Leu	Gln	Arg	Leu	Ile	Asp	Ser	Gln	Met	Glu	Thr	Ser	Cys	Gln	50	55	60	
Ile	Thr	Phe	Glu	Phe	Val	Asp	Gln	Glu	Gln	Leu	Lys	Asp	Pro	Val	Cys	65	70	75	80
Tyr	Leu	Lys	Lys	Ala	Phe	Leu	Leu	Val	Gln	Asp	Ile	Met	Glu	Asp	Thr	85	90	95	
Met	Arg	Phe	Arg	Asp	Asn	Thr	Pro	Asn	Ala	Ile	Ala	Ile	Val	Gln	Leu	100	105	110	
Gln	Glu	Leu	Ser	Leu	Arg	Leu	Lys	Ser	Cys	Phe	Thr	Lys	Asp	Tyr	Glu	115	120	125	
Glu	His	Asp	Lys	Ala	Cys	Val	Arg	Thr	Phe	Tyr	Glu	Thr	Pro	Leu	Gln	130	135	140	
Leu	Leu	Glu	Lys	Val	Lys	Asn	Val	Phe	Asn	Glu	Thr	Lys	Asn	Leu	Leu	145	150	155	160
Asp	Lys	Asp	Trp	Asn	Ile	Phe	Ser	Lys	Asn	Cys	Asn	Asn	Ser	Phe	Ala	165	170	175	
Glu	Cys	Ser	Ser	Gln	Asp	Val	Val	Thr	Lys	Pro	Asp	Cys	Asn	Cys	Leu	180	185	190	
Tyr	Pro	Lys	Ala	Ile	Pro	Ser	Ser	Asp	Pro	Ala	Ser	Val	Ser	Pro	His	195	200	205	
Gln	Pro	Leu	Ala	Pro	Ser	Met	Ala	Pro	Val	Ala	Gly	Leu	Thr	Trp	Glu	210	215	220	
Asp	Ser	Glu	Gly	Thr	Glu	Gly	Ser	Ser	Leu	Leu	Pro	Gly	Glu	Gln	Pro	225	230	235	240
Leu	His	Thr	Val	Asp	Pro	Gly	Ser	Ala	Lys	Gln	Arg	Pro	Pro	Arg	Ser	245	250	255	
Thr	Cys	Gln	Ser	Phe	Glu	Pro	Pro	Glu	Thr	Pro	Val	Val	Lys	Asp	Ser	260	265	270	
Thr	Ile	Gly	Gly	Ser	Pro	Gln	Pro	Arg	Pro	Ser	Val	Gly	Ala	Phe	Asn	275	280	285	
Pro	Gly	Met	Glu	Asp	Ile	Leu	Asp	Ser	Ala	Met	Gly	Thr	Asn	Trp	Val	290	295	300	
Pro	Glu	Glu	Ala	Ser	Gly	Glu	Ala	Ser	Glu	Ile	Pro	Val	Pro	Gln	Gly	305	310	315	320
Thr	Glu	Leu	Ser	Pro	Ser	Arg	Pro	Gly	Gly	Gly	Ser	Met	Gln	Thr	Glu	325	330	335	
Pro	Ala	Arg	Pro	Ser	Asn	Phe	Leu	Ser	Ala	Ser	Ser	Pro	Leu	Pro	Ala	340	345	350	
Ser	Ala	Lys	Gly	Gln	Gln	Pro	Ala	Asp	Val	Thr	Gly	His	Glu	Arg	Gln	355	360	365	
Ser	Glu	Gly	Ser	Ser	Ser	Pro	Gln	Leu	Gln	Glu	Ser	Val	Phe	His	Leu	370	375	380	
Leu	Val	Pro	Ser	Val	Ile	Leu	Val	Leu	Leu	Ala	Val	Gly	Gly	Leu	Leu	385	390	395	400
Phe	Tyr	Arg	Trp	Arg	Arg	Arg	Ser	His	Gln	Glu	Pro	Gln	Arg	Ala	Asp	405	410	415	
Ser	Pro	Leu	Glu	Gln	Pro	Glu	Gly	Ser	Pro	Leu	Thr	Gln	Asp	Asp	Arg	420	425	430	
Gln	Val	Glu	Leu	Pro	Val														